LIPMAN, G., konstruktor; LIKHTERMAN, B., konstruktor

The air footwear of transportation. Tekh.mol. 30 no.10:18-21 '62. (MIRA 15:12)
(Arctic regions--Transportation)
(Ground-cushion phenomenon)
(Motor sledges)

CHKALOVA, O.; LIPMAN, G.

Stepan Suprun Street. Kryl. rod. 16 no.8:8 Ag '65.
(MIRA 18:8)

LIPMAN, Grigoriy Semenovich; TURGENEV, Gennadiy Mikhaylovich; IVANOV, S.M., red.

[Snow vehicles] Snegokhody. Moskva, Izd-vo "Znanie," 1965. 25 p. (Novoe v zhizni, nauke, tekhnike. IV Seriia: Tekhnika, no.10) (MIRA 18:5)

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OLEYNIK, A.P., dorozhnyy master (Stantsiya Kolkhoznyy, Yuzhnoy dorogi); BUGAYCHUK, I.S., starshiy dorozhnyy master (Stantsiya Kazatin, Yugo-Zapadnoy dorogi); LIPMAN, L.P., inzh. (g. Kazan'); ALEKSEYEV, Ye.V., mostovoy master (Stantsiya Belev, Moskovskoy dorogi)

Letters to the editor. Put' put.khoz. 5 no.9:47 S '61. (MIRA 14:10)

(Railroads)

LIPMAN, L.A.

Icebreaker. Put' i put.khoz. 7 no.12:37 '63. (MIRA 16:12)

1. Nachal'nik Kazanskoy distantsii Gor'kovskoy dorogi.

LIPMAN, L.A.

Improve the training of specialists for mechanized track divisions. Put' i put. khoz. 8 no.9:28 '64. (MIRA 17:11)

1. Nachal'nik distantsii puti, stantsiya Kazan', Gor'kovskoy dorogi.

LIPMAN, M. M.

LIPMAN, M. M. — "Reaction fo Nitroindandione Salts with Iodine." Latvian State U, 1948
(Dissertation for the Degree of Candidate of Medical Sciences)

SO: Izvestiya Ak. Nauk Latvivskoy SSR. No. 9, Sept., 1955

CA

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2-Iodo-2-nitro-1,3-indandione. G. Ya. Vanag and M. M. Lipman. *Doklady Akad. Nauk S.S.S.R.* **68**, 693-6(1949).—Prepn. of 2-iodo-3-nitro-1,3-indandione, which cannot be prepd. analogously to the Cl or Br derivs., was effected by the action of iodine on the Ag salt of the nitro deriv. If a dry mixt. of these components is warmed in a sealed tube to 130° a strong *explosion* takes place with formation of o-$C_6H_4(CO)_2O$ and, apparently, Ag fulminate. If the mixt. does not explode, the product is the desired *2-iodo-2-nitro-1,3-indandione* (I), m. 128° (from C_6H_6), obtainable in up to 70% yields; even an excess of iodine fails to give more complete conversion. I gives yellow solns. in most org. solvents and liberates iodine on warming in soln.; at 145° I turns red and evolves iodine, a process complete at 165°, leaving an iodine-free material, sol. in H_2O with acid reaction, apparently with formation of o-$C_6H_4(CO)_2O$, converted to the acid with H_2O, and of ninhydrin. Treatment of I with aq. KI leads to formation of iodine in a quant. reaction, with the radical of the nitroindandione forming the K salt (II); the above occurs only in dil. solns., for in concd. aq. KI there is formed a ppt. of dark needles of a double salt, $II_2 \cdot KI \cdot I_2$, of the above K salt with KI and iodine. I reacts with $Na_2S_2O_3$ with evolution of iodine (sol. in excess thiosulfate), via initial binding by the thiosulfate of the pseudohalogen radical of the nitroindandione, and only after completion of this step does the usual iodine-thiosulfate reaction take place. Weak alkali also liberates iodine from I and the latter is sol. in excess of the reagent. Boiling I with H_2O yields nitroindandione and HOI. The following prepn. of I is more satisfactory than the sealed-tube procedure. Cooling a soln. of 3.4 g. *2-nitro-1,3-indandione* and 2.5 g. $AgNO_3$ in 600 ml. boiling H_2O yields the *Ag salt*, which ppts. progressively in 3 colors: yellow, orange, and finally white (the latter is least stable, but any of the 3 forms may be used in the prepn.); yield 60%, and the remainder may be recovered from the soln. (soly. 3 g./l.); the Ag salt decomp. vigorously at 230°, forming metallic Ag and o-$C_6H_4(CO)_2O$. The Ag salt (14.6 g.) and 9.5 g. iodine are thoroughly triturated and left for 5 days in a closed test tube; after retrituration and further a 1–2 days' standing (complete clarification) and extn. with hot C_6H_6, there is obtained on cooling 73.5% I, m. 128°; addtl. amts. may be obtained from the soln. (soly. 9% in C_6H_6). The C_6H_6-insol. portion contains some untreated Ag salt, extractable by hot H_2O, and 8.4 g. AgI. G. M. K.

LIPMAN, M.

Chemical Abstracts
May 25, 1954
Organic Chemistry

(3) 4

The reaction of salts of nitroindandione with iodine. G. Vanags and M. Lipman. *Kim. Inst. Zinātnisk. Raksti, Latvijas PSR Zinātņu Akad.* 1, 81-02(1950)(in Russian).—
44, 7700d. Edward G. Mazurs

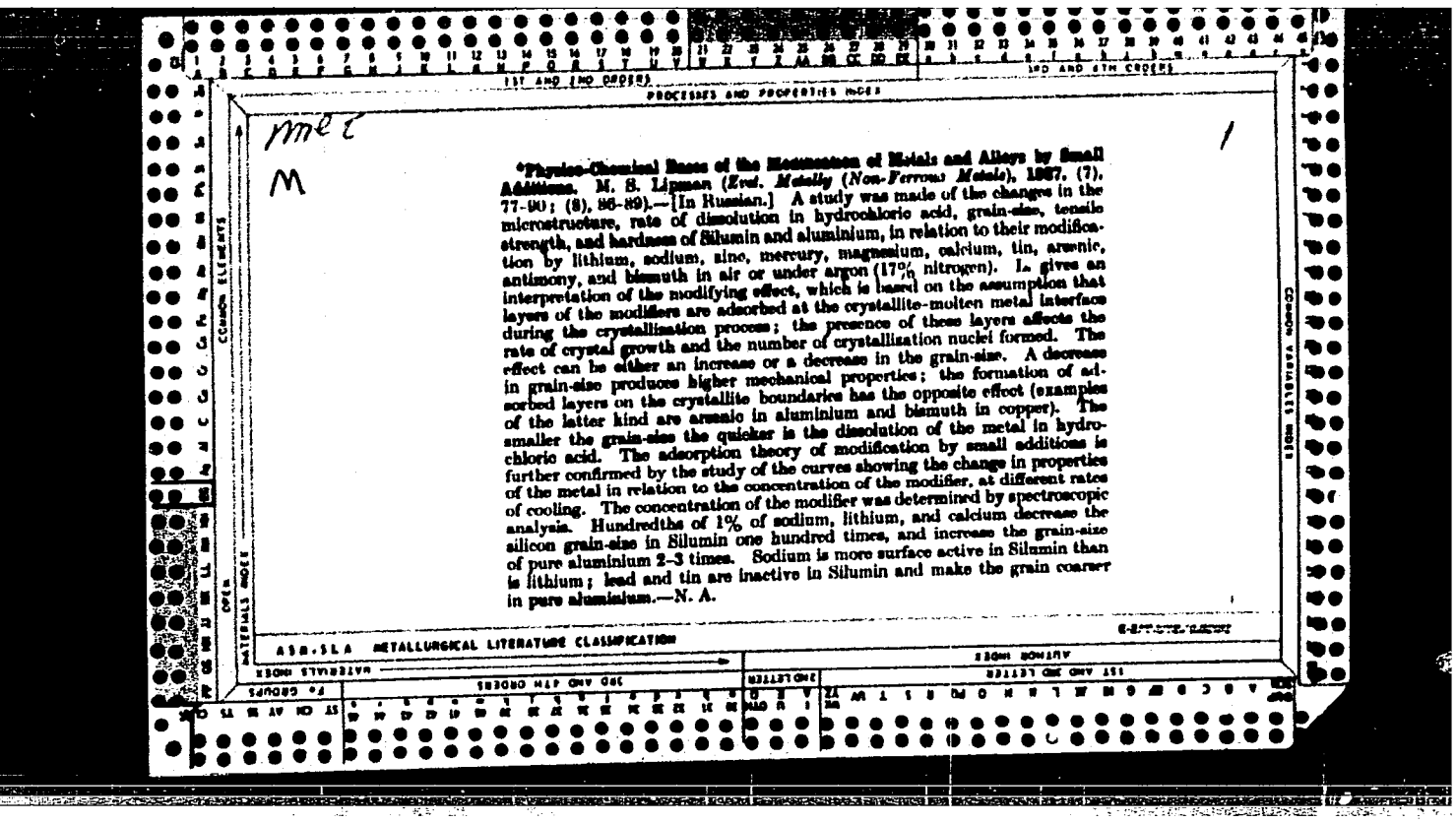
10-12-54

CA LIPMAN, M. M.

6

Complex salts of nitroindandiones. G. Ya. Vanag and M. M. Lipman (Acad. Sci. Latvian S.S.R.). *Doklady Akad. Nauk S.S.S.R.* 71, 473–6(1950); cf. *C.A.* 44, 10475b.—Addn. of I-KI soln. to an aq. soln. of K derivs. of $C_6H_4(CO)_2CHNO_2$ (I), does not lead to decolorization, but a greenish gelatinous ppt. forms, which readily loses I_2 on exposure to air; dried *in vacuo* in vapors of I_2, the product is a black powder with green luster, which loses I_2 on warming, and its compn. approximates $A_2KI.I_2$, where A is the K deriv. of I. The *Na deriv.* of I could not be prepd. similarly, but was prepd. by addn. of powd. I_2 to concd. soln. of Na deriv. of I followed by standing 24 hrs. In appearance and behavior it is similar to the above. On storage in air the complex loses 1 atom of I forming $A_2KI.I_2$. The product obtained by the action of powd. I_2 approximates the compn. $A_2.I_2$, which on standing in air forms A_2I_2. Similar prepn. of Ca analog, $A_2.CaI_2.3I_2$ (where A is the Cu deriv. of I) and the NH_4 analog, $A_{12}.2NH_4I.5I_2$ (where A is the NH_4 deriv. of I) results in analogous unstable solids; the NH_4 deriv. decomposes completely on exposure to air, yielding the NH_4 deriv. of I. Addn. of various salt solns. to these complexes yields colored slightly sol. ppts.; thus, *Sr salts* give a deep-violet ppt., which on long standing is converted to the yellow Sr deriv. of I; *Ba salts* give a flaky brown ppt.; *Pb* yields cherry red ppt. Other cations fail to give clearly defined products. Generally the most stable complexes are those contg., besides I_2, the iodide of a metal. As the at. wt. of the metal increases, the complex stability declines.

G. M. Kosolapoff



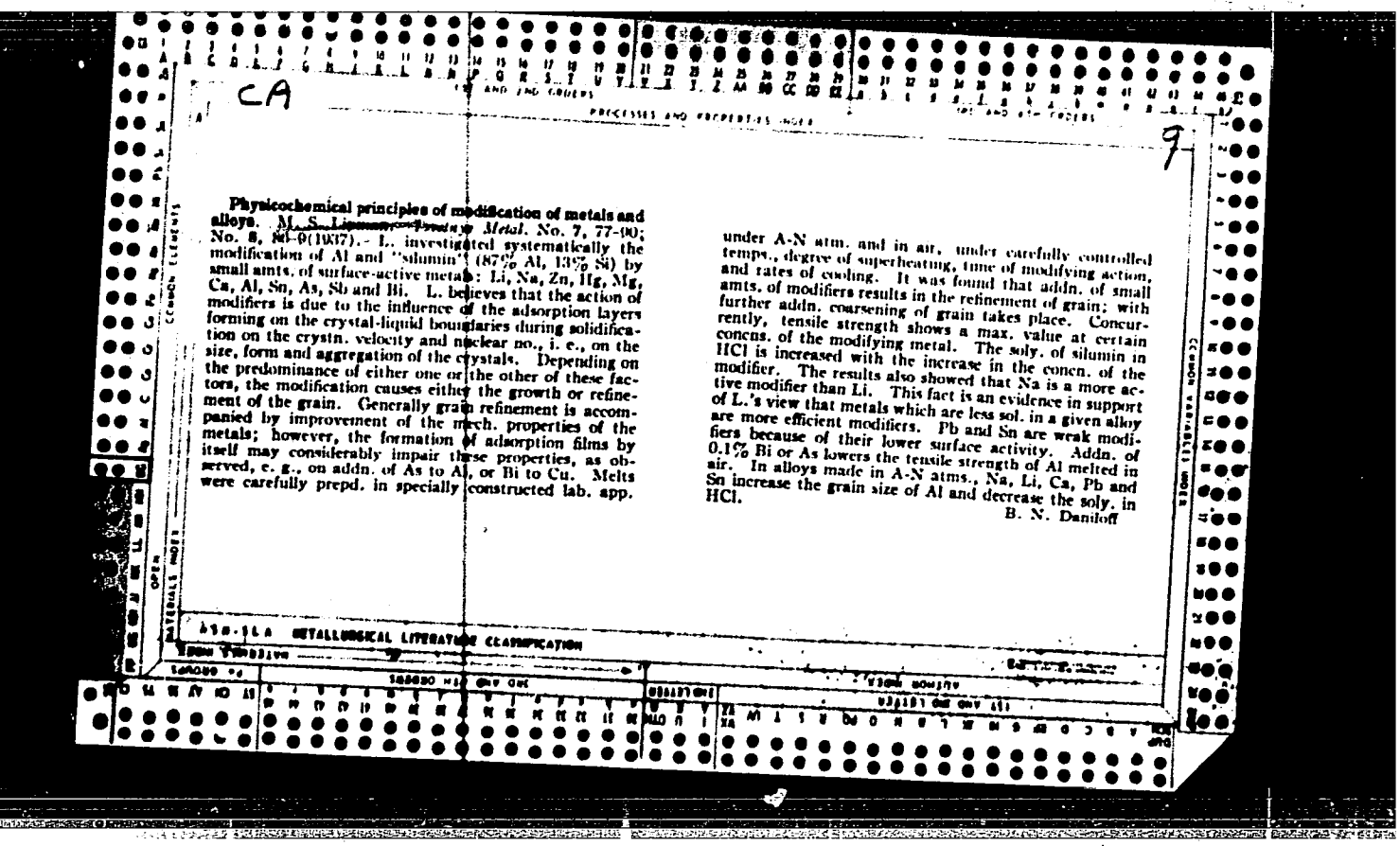
PROCESSES AND PROPERTIES INDEX

met
M

1

Physico-Chemical Basis of the Modification of Metals and Alloys by Small Additions. M. S. Lipman (*Zvet. Metally* (*Non-Ferrous Metals*), 1937, (7), 77-90; (8), 86-89).—[In Russian.] A study was made of the changes in the microstructure, rate of dissolution in hydrochloric acid, grain-size, tensile strength, and hardness of Silumin and aluminium, in relation to their modification by lithium, sodium, zinc, mercury, magnesium, calcium, tin, arsenic, antimony, and bismuth in air or under argon (17% nitrogen). L. gives an interpretation of the modifying effect, which is based on the assumption that layers of the modifiers are adsorbed at the crystallite-molten metal interface during the crystallisation process; the presence of these layers affects the rate of crystal growth and the number of crystallisation nuclei formed. The effect can be either an increase or a decrease in the grain-size. A decrease in grain-size produces higher mechanical properties; the formation of adsorbed layers on the crystallite boundaries has the opposite effect (examples of the latter kind are arsenic in aluminium and bismuth in copper). The smaller the grain-size the quicker is the dissolution of the metal in hydrochloric acid. The adsorption theory of modification by small additions is further confirmed by the study of the curves showing the change in properties of the metal in relation to the concentration of the modifier, at different rates of cooling. The concentration of the modifier was determined by spectroscopic analysis. Hundredths of 1% of sodium, lithium, and calcium decrease the silicon grain-size in Silumin one hundred times, and increase the grain-size of pure aluminium 2–3 times. Sodium is more surface active in Silumin than is lithium; lead and tin are inactive in Silumin and make the grain coarser in pure aluminium.—N. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



CA

9

Physicochemical principles of modification of metals and alloys. M. S. [illegible] *Metal.* No. 7, 77-90; No. 8, 81-9(1937).- L. investigated systematically the modification of Al and "silumin" (87% Al, 13% Si) by small amts. of surface-active metals: Li, Na, Zn, Hg, Mg, Ca, Al, Sn, As, Sb and Bi. L. believes that the action of modifiers is due to the influence of the adsorption layers forming on the crystal-liquid boundaries during solidification on the crystn. velocity and nuclear no., i. e., on the size, form and aggregation of the crystals. Depending on the predominance of either one or the other of these factors, the modification causes either the growth or refinement of the grain. Generally grain refinement is accompanied by improvement of the mech. properties of the metals; however, the formation of adsorption films by itself may considerably impair these properties, as observed, e. g., on addn. of As to Al, or Bi to Cu. Melts were carefully prepd. in specially constructed lab. app. under A-N atm. and in air, under carefully controlled temps., degree of superheating, time of modifying action, and rates of cooling. It was found that addn. of small amts. of modifiers results in the refinement of grain; with further addn. coarsening of grain takes place. Concurrently, tensile strength shows a max. value at certain concns. of the modifying metal. The soly. of silumin in HCl is increased with the increase in the concn. of the modifier. The results also showed that Na is a more active modifier than Li. This fact is an evidence in support of L.'s view that metals which are less sol. in a given alloy are more efficient modifiers. Pb and Sn are weak modifiers because of their lower surface activity. Addn. of 0.1% Bi or As lowers the tensile strength of Al melted in air. In alloys made in A-N atms., Na, Li, Ca, Pb and Sn increase the grain size of Al and decrease the soly. in HCl.

B. N. Daniloff

CA

1

Flux for soldering metals. A. S. Liptman. U.S.S.R. 69,981, Dec. 31, 1947. Salts capable of dissolving metal oxides are used for this purpose, i.e., K and Na bifluorides. These salts increase the fluidity of the flux and wet the joint surfaces.

M. Hoseh

C. A.

1951

7

Viscosity of lead bronzes in the fused state. M. A. Lipman. *Zavodskaya Lab.* 16, 1349-54(1950).--Kinematic viscosities ν were detd. by the method of torsional vibrations. Detns. on H_2O (in air), Sn at 303 and 624°, Pb at 487, 530, and 540°, and Cu at 1140°, under reduced pressures of 0.001, 0.001, 0.05, and 0.05 mm. Hg, resp., gave values close to literature data. Measurements on Pb at 456° and on Cu at 1140° in an A atm. agree closely with detns. made *in vacuo*. Pb bronzes with 30% Pb have a much lower ν than Cu, if the measurements are made 50° above the melting temp. For the binary Cu 80-Pb 20 alloy, ν (50° above the melting temp.) is close to that of Cu, but is strongly reduced by 1% Sn. N. Thon

TKACHENKO, K.M.; LIPMAN, M.S.

Use of zircon concentrates in foundry practice. Lit. proizv. no.1:7-8 Ja '62. (MIRA 16:8)

(Founding) (Zircon)

LIPMAN, R. A.

Lipman, R. A. - "Loss of voltages in an evenly charged grid," Trudy Studench. nauch.-tekhn. o-va (Mosk. energet. in-t im. Molotova), Issue 3, 1949, p. 29-37

SO: U-4355, 14 August 53, (Letopis 'Zhurnal 'nykh Statey, No. 15, 1949)

AUTHOR: LIPMAN,R.A., NEGNEVITSKIY,I.B. PA - 2837

TITLE: On the Theory of a Half-Wave Magnetic Amplifier, I. (K teorii odnopoluperiodnogo magnitnogo usilitelya, I., Russian)

PERIODICAL: Avtomatika i Telemekhanika, 1957, Vol 18, Nr 4, pp 349 - 370 (U.S.S.R.)

Received: 5 / 1957 Reviewed: 6 / 1957

ABSTRACT: Reference is made to the paper by R.RAMEY ("On the Mechanics of Magnetic Amplifier Operation". Trans. AIEE Vol 70, part II, 1951), in which a new scheme of magnetic amplifier, which is distinguished from the usual systems by its rapid effect, was described. In the present paper the modification of the current in the control current circuit is analyzed, the range of the application for the formula obtained for current under load is given together with that for the voltage amplification coefficient, and the question of power amplification is investigated. The scheme investigated here is the simple scheme by RAMEY. The results obtained in form of formulae and curves in relative units may be described as generalizing. With their aid it is possible to find the necessary characteristics of a concrete amplifier. The generalized characteristics are computed only once, and it is not necessary to repeat this computation. The basic characteristics are here mentioned. The experiment showed good agreement between computed and experimental data in the case in which good magnetic materials with a rectangular hysteresis loop

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PA - 2837

On the Theory of a Half-Wave Magnetic Amplifier, I.

was used. The results obtained here can be extended to the more general kind of "single core" magnetic amplifiers with interior back-coupling. In conclusion it is stated that both theoretically and experimentally it was possible to prove that the presence of the valve B_y in the control circuit can only deteriorate the operation of the amplifier, but that, conditions otherwise being the same, the lack of this valve does not change the amount of the average current value under load. (14 illustrations).

ASSOCIATION: Not given
SUBMITTED:
PRESENTED BY:
AVAILABLE: Library of Congress.

Card 2/2

AUTHOR LIPMAN R.A., NEGNEVITSKIY I.B. PA - 3231

TITLE On the Theory of a Half-Wave Magnetic Amplifier, II. (K teorii odnopoluperiodnogo magnitnogo usilitelya, II.- Russian.)

PERIODICAL Avtomatika i Telemekhanika 1957, Vol 18, Nr 5, pp 449-465 (USSR)

Received: 6/1957 Reviewed: 7/1957

ABSTRACT The paper under review actually represents a further analysis or continuation of the topic investigated in the paper in Avtomatika i Telemekhanika 1957, Vol 18, Nr 4, pp 349-370. Here we obtain the mathematical interrelationships between the parameters of the amplifier and its construction parameters (dimensions of the impedance coil etc.). The control electromotive force is assumed to be sine-shaped and this with the same frequency as the supply frequency of the amplifier. First of all, the paper under review investigates the operation of the amplifier if the valve in the control circuit is lacking, and then the operation when there exists a shifting, taking into account the finite greatness of the dynamic magnetic permeability. The mathematical interrelationship between the parameters of the amplifier and the construction parameters of the impedance coil

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On the Theory of a Half-Wave Magnetic Amplifier, II.

and the magnetic properties of the core is derived, and the amplifier described here is compared with the normal magnet amplifier with internal regeneration. The conclusion is drawn that the inductive resistance of the impedance coil must be determined in different ways depending on whether there exists or does not exist a shifting. It is shown that in the amplifier described, contrary to normal amplifiers, the amplification coefficient for the performance can be increased only at the expense of an increase in the dimensions of the core and in the supply frequency (while maintaining the same operational speed).
(11 reproductions, 3 Slavic references.)

ASSOCIATION: not given.
PRESENTED BY:-
SUBMITTED: 27.7. 1956
AVAILABLE: Library of Congress.

CARD 2/2

LIPMAN, R.A.

(Diss) "Problems involved in the theory and design of rapid-action magnetic amplifiers."Mos 1958. 19 pp, (Min of Higher Education USSR Mos order of Len, Power Eng Inst, 150 copies (KL, 33-58, 118)

AUTHORS: Lipman, R. A., Engineer, 105-58-6-13/33
Negnevitskiy, I. B., Docent, Candidate of Technical Sciences

TITLE: Magnetic Choke-Coupled Amplifier (Drossel'nyy magnitnyy usilitel')

PERIODICAL: Elektrichestvo, 1958, Nr 6, pp. 49-55 (USSR)

ABSTRACT: The foundation of the theory of a stabilized and of a transient process in the most simple magnetic amplifier of the impedance-type without reaction coupling, with a. c. windings connected in series and an effective induction load are explained here. It is a subsequent development of the problems dealt with by the author in reference 1. The magnetization curve is assumed to be an ideal one. The fundamental assumptions and the methods of analysis are the same as in reference 1. The amplifier is investigated with a finite effective resistance of the control-circuit for even harmonics. That method of operation where the reduced resistance of the control circuit is much smaller than the resistance of the a. c. circuit,

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viz. where the natural magnetization takes place, is investigated most thoroughly. The formulae for the 4 parameters of the amplifier - (the degree of saturation ξ, the loading angle φ, the ratio k of the reduced resistances and the degree of magnetization p) are written down. According to the amount of induction, three states of circuit diagram (Reference 1) are possible: 1) Both cores are not saturated, 2) one core is saturated, 3) both cores are saturated and both the load- and control-circuit are completely uncoupled. Any problem for the circuit diagram given here can be solved by means of the equations written down here for the parameters. The stabilized method of operation is investigated here and this investigation is carried out under the condition, that the state 3) does not obtain, viz. the amplifier is normally operated, by "proportional amplification". The equations (13) and (14) are derived. They produce the relation of the angles α and β with the parameters p, k and φ. With $\xi \ll 1$ these angles do not depend on ξ. The case with $\xi > 1$ is not dealt with here, since the state 3 does not occur hereby. The

calculation of the characteristics with finite value of k is relatively voluminous. The investigations have shown that already with $k \geq 10$ all characteristics practically coincide with the characteristics with $k = \infty$ (natural magnetization). The subsequent analysis is therefore carried out only for the case $k = \infty$. The input-output characteristics are investigated. It is shown that the amplification-factor must be calculated according to the apparent power. Formula (22) is derived for the relative factor of amplification according to the apparent power. - The case of natural magnetization is only taken into consideration with the investigation of the transition processes (state 3 lacks). Equation (29) for the dependence of B on I_y is derived. The time-constant of the control-circuit is simultaneously also the time-constant of the amplifier as a whole. The equation (35) is derived for this. The important fact, that the transition-process for the mean values can be considered as exponential within the whole working range of the amplifier characteristic only in case of

effective load, is pointed out. But even in this case, the law for the change of the maximum value or of the value effective during a period will differ from an exponential law. Further, it is of importance for practice that a certain retardation exists with reduced supply voltage and only after this time the current begins to increase under load according to the time-constant. It is shown that the retardation-time with $\xi < 1$ is the greater, the smaller is the supply-voltage and the amount of reduced e.m.f of the input-signal with respect to the supply e. m. f. This time does not depend on the factor of amplification according to the output, the amount and character of the resistance in the control-circuit and on the load. The quality of the magnetic amplifier is characterized by the so-called dynamic efficiency factor D - the ratio of the factor of amplification according to the output with respect to the time-constant. The formula (42) is written down for the relative efficiency factor D^{o}. The formulae for the time-constant and the dynamic efficiency factor hold on the condition that the time-constant is not greater than the supply-period.

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Magnetic Choke-Coupled Amplifier 105-58-6-13/33

There are 7 figures and 4 Soviet references.

ASSOCIATION: Moskovskiy energeticheskiy institut
(Moscow Institute for Power Engineering)

SUBMITTED: July 29, 1957

1. Magnetic amplifiers--Theory 2. Magnetic amplifiers--Performance 3. Mathematics

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SOV/105-58-7-6/32

AUTHORS: Lipman, R. A., Engineer
Nogmevitskiy, I. B., Docent, Candidate of Technical Sciences

TITLE: Transition-Processes in a Magnetic Amplifier Working as a Relay (Perekhodnyye protsessy v magnitnom usilitele, rabotayushchem v releynom reshime)

PERIODICAL: Elektrichestvo, 1958, Nr 7, pp. 25 - 30 (USSR)

ABSTRACT: A physical explanation and a rigorous mathematical analysis of the considerable retardation (lagging) taking place in some cases in practice in connection with the responding and releasing of the relay which considerably exceeds the values mentioned in Ref 1, is given here on the basis of an example of the most simple contactless magnetic relay. - Formulae are derived by means of which the lagging time and the time required for full responding or loosening in the presence of an initial displacement may be calculated. The magnetization curve of the cores, and also the valves are assumed to be ideal for the purpose of simplification. The influence exercised by the eddy currents is not taken

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Transition-Processes in a Magnetic Amplifier Working as a Relay

into account. The basic parameters characterizing the operation of a contactless magnetic relay are determined in relative units. The transition process in this relay is investigated in connection with the sudden connection of the electromotive force of the signal E_y. It is assumed in this connection that the displacement current circuit is supplied by the power source. In the case of positive displacement the relay will show a "normal open contact". If displacement--windings act in conformity with the reaction winding (relay with "normally closed contact") the investigation is carried out in the same manner. - The time required for the responding and loosening of the relay may be determined from the formulae (22) and (27) - (29) obtained in this way - according to the known reserve factor k_R, reversing factor k_U, reaction coupling factor k_{RK}, the factor of power amplification without reaction coupling k, and the amount of relative supply voltage ε. All these values are usually known from the static characteristics of the relay. Determination of the time required for the responding and loosening of the relay by means of relative factors and not by means of absolute amperages of the control, of response, etc. is -

Transition-Processes in a Magnetic Amplifier Working as a Relay

according to the authors' opinion - of considerable advantage for the calculation and investigation of the influence exercised by various parameters upon these times $t_{response}$ and $t_{loosening}$.

The results obtained by experimental examination are given and it is said that lagging in connection with the responding (or loosening) of a contactless magnetic relay might be utilized for the manufacture of contactless time-limit relays. The latter will be found to be more advantageous than similar contactless relays because the current under load practically does not change during the interval. In spite of the assumed ideal form of the magnetization curve, the formulae for the calculation of the time required for responding and loosening agree well with the tests. This is the case if the values k_R, k_U and Δ^o are determined in accordance with the experimentally obtained static relay-characteristics. Δ^o is the relative width of the relay characteristic (loop). - The transition process in connec-

Transition-Processes in a Magnetic Amplifier Working as a Relay

tion with the response of the relay according to individual stages corresponding to the different curve-sectors in Fig 2, is investigated in the appendix. There are 5 figures, 1 table, and 5 Soviet references.

ASSOCIATION: Moskovskiy energeticheckiy institut (Moscow Institute of Power Engineering)

SUBMITTED: February 2, 1958

1. Magnetic amplifiers--Mathematical analysis 2. Magnetic amplifiers --Transients

Card 4/4

AUTHORS: Varpakhovskiy, F. L., Lipman, R. A., SOV/103-19-11-4/[illegible]
(Moscow)

TITLE: Contactless Relay With Semi-Conductor Triodes (Beskontaktnoye rele na poluprovodnikovykh triodakh)

PERIODICAL: Avtomatika i telemekhanika, 1958, Vol 19, Nr 11, pp 1027 - 1035 (USSR)

ABSTRACT: The circuit-diagram of a contactless relay is investigated. This relay is an amplifier with semi-conductor triodes of the junction-type showing the relay characteristic obtained by (positive) feedback coupling. When triodes of the types P4, P3, P6, are employed such a relay warrants an output-power of up to 100-200 W having an amplification factor of up to 10^5 - 10^6. The circuit-diagram of the contactless relay is a continuous current amplifier with two cascades, where each cascade is switched on as a grounded transmitter circuit. The amplifier has a (positive) feedback of the current on account of the common transmitter resistance R_o. The manner in which the circuit works is analyzed and the fundamental formulae are derived. The formulae (15a), (15δ), (16) and

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Contactless Relay With Semi-Conductor Triodes SOV/103-19-11-4/10

(17) connect the coordinates of the operating points and the releasing points with all the parameters of the circuit-diagram and the characteristics of the triodes. Any arithmetical problem concerning the circuit-diagram can, therefore, be solved by means of these formulae. For this purpose it is only necessary to have one characteristic triode and two characteristics of the input triode. Finally, the results of the experimental examination of the circuit-diagram are given. There are 6 figures and 2 Soviet references.

SUBMITTED: August 15, 1957

Card 2/2

LIPMAN, R.A

AUTHOR: Lipman, R.A., Engineer 110-1-6/19

TITLE: The Control of High-speed Magnetic Amplifiers by Means of Semi-conducting Triodes (Upravleniye bystrodeystvuyushchimi magnitnymi usilitelyami pri pomoshchi poluprovodnikovykh triodov)

PERIODICAL: Vestnik Elektropromyshlennosti, 1958, Vol.29, No.1, pp. 23 - 30 (USSR).

ABSTRACT: The use of a transistor in cascade as a pre-amplifier controlling a comparatively high-output magnetic amplifier achieves a reliable high-speed amplifier of fairly high output. This article examines the behaviour of the combination. The simplest cascade connection of a transistor and a single half-wave magnetic amplifier is given in Fig.1A. The circuit is analysed, using stated assumptions and definitions. These relate particularly to the magnetisation curve of the core of the magnetic amplifier. The reactances of the transistor are ignored. Current oscillograms for the transistor when the commutation circuit is supplied by half-wave and full-wave rectified voltages are shown in Fig.3. The operating conditions are examined, commencing with a control half-cycle. The graphs of change of voltages and currents, etc. during a complete cycle are given in Fig.4. It is shown that if the change in the

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The Control of High-speed Magnetic Amplifiers by Means of Semiconducting Triodes

input signal takes place at the beginning of the control half-cycle, the first working voltage half-cycle on the load will correspond to the new value of the signal and no transient process arises. In the general case, when the change of signal occurs at some other time, the duration of the transient process will not exceed one full cycle of supply frequency. The input/output characteristic is then considered. It is defined as the relationship between the input voltage and the mean value of the load voltage. Experimental and calculated values of the relationship between the load and the saturation voltages are given in Fig.5. Experimental curves of the load voltage as a function of the control voltage, when the transistor is connected in a common-based circuit, are given in Fig.6A, together with a circuit diagram. Corresponding curves when the transistor is connected with a common emitter are given in Fig.6B. Oscillograms of transient processes corresponding to the given static characteristics appear in Figs. 7A and B.

The article considers the case when the control signal is a d.c. voltage, but the circuit can also be controlled by an

The Control of High-speed Magnetic Amplifiers by Means of Semi-conducting Triodes.

alternating-current signal at supply frequency. In this case, the maximum amplification is obtained when the control voltage is in phase with the supply voltage. Analysis and experiments show that the input/output characteristics are very similar, whether d.c. or a.c. control signals are used.
The arrangement is also possible without a special source of supply for the commutation circuit of the transistor, as shown in Fig.1B. The operating conditions of the triode are not the same in the two cases and the difference is explained.
The circuits of Figs. 1A and 1B for a half-wave output can serve as the basis for various circuits with full-wave output, one of which is given in Fig.1C. The circuit is fed from a three-winding transformer. The mean value of the output current or voltage is, in this case, double that given by the circuit of Fig.1A. Oscillograms of transient processes for Fig.1C are given in Figs. 7C and D.
The use of negative-feedback with the circuits given in Fig.1 is briefly considered. It cannot be used directly with the circuit of Fig.1A, but ways of overcoming this difficulty are explained. The circuit of Fig.1C, with full-wave output, can

The Control of High-speed Magnetic Amplifiers by Means of Semi-conducting Triodes

be arranged for negative-feedback in the usual way. An oscillogram of the operation of a contactless relay using the circuit of Fig.1C with feedback according to the circuit of Fig.1D is given in Fig.7E.
Equations are then derived for the power at the transistor. Others show that for the circuits considered, the mean voltage on the load of the magnetic amplifier is proportional to the mean voltage at the transistor. This recalls the basic relationship for a half-wave magnetic amplifier controlled by a source of e.m.f. of low internal resistance, according to which the mean value of the voltage on the load is proportional to the mean value of the signal voltage whatever the wave-shape of the latter. It is also shown that the power at the transistor is determined by the hysteresis and eddy-current losses in the amplifier core. Thus, in a sense, control of the amplifier takes place at the expense of change in the power at the transistor.
A procedure is recommended for making calculations in the design of equipment using the circuits of Fig.1.
There are 9 figures, and 3 Russian references.

ASSOCIATION: MEI

110-1-6/19

The Control of High-speed Magnetic Amplifiers by Means of Semiconducting Triodes

SUBMITTED: March 9, 1957

AVAILABLE: Library of Congress

Card 5/5

15(6)
SOV/72-59-2-7/21

AUTHORS: Lipman, R. A., Mazo, R. I., Nosova, Z. A.

TITLE: Instrument for Measuring and Recording the Viscosity of Silicate Melts (Pribor dlya izmereniya i zapisi vyazkosti silikatnykh rasplavov)

PERIODICAL: Steklo i keramika, 1959, Nr 2, pp 18-21 (USSR)

ABSTRACT: As can be seen from the papers by V. A. Golubtsov, I. Ya. Zalkind, T. V. Bursian (Ref 1), the common torsion-viscosimeter has been hitherto employed for the above purpose. It shows, however, a number of deficiencies. The NIIStroykeramika has worked out a new type of viscosimeter (Fig 1) based upon a different principle. The moment caused by friction and no longer the filar angle of rotation is measured. The respective scheme is shown in figures 2 and 3, and a description is given in detail. An electronic potentiometer of the EPP-09 type is used for the automatic recording of viscosity. Figure 4 shows the course of temperature with respect to time and figure 5 presents a calibration curve. The logarithmic dependence of viscosity on temperature is illustrated in figure 6.

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SOV/72-59-2-7/21

Instrument for Measuring and Recording the Viscosity of Silicate Melts

There are 6 figures and 2 Soviet references.

Card 2/2

PHASE I BOOK EXPLOITATION SOV/4704

Lipman, Roydzhoy Aleksandrovich, and Iosif Borisovich Negnevitskiy

Bystrodeystvuyushchiye magnitnyye i magnitno-poluprovodnikovyye usiliteli (High-Speed Magnetic and Transistor-Magnetic Amplifiers) Moscow, Gosenergoizdat, 1960. 403 p. 10,000 copies printed.

Ed.: R.A. Baryshnikova; Tech. Ed.: K.P. Voronin.

PURPOSE: The book is intended for technical personnel of scientific research institutes, laboratories, and factory design offices concerned with the development of amplifiers. It may also be used as a textbook for special courses at electrical engineering divisions of schools of higher education.

COVERAGE: This book sets forth the fundamentals of circuit design, describes physical processes, basic quantitive relationships, and characteristics (in terms of relative units) of various high-speed magnetic and transistor-magnetic amplifiers. Simple technical methods of designing the saturable reactor (core, windings) of magnetic amplifiers are included. The authors state that the theory and practice of high-speed magnetic amplifiers are

Card ~~1/8~~

insufficiently treated in contemporary technical literature. Several problems are discussed in separate articles in Soviet and foreign periodicals, however, without any organic connection between them. This book appears to be an initial effort to fill this gap. Chapters IX and X were written by R.A. Lipman and the remaining chapters jointly by the two authors. Sections 3-9, 6-1, and Chapter VII were written with the permission of L.L. Samurina and are based on her doctoral dissertation. The authors thank Professor M.A. Rozenblat, Doctor of Technical Sciences, and R.A. Baryshnikova for their help. There are 78 references: 40 Soviet, 1 Czech, 36 English, and 1 French.

TABLE OF CONTENTS:

LIPMAN, R.A., kand.tekhn.nauk; MAZO, R.I., inzh.

Photoelectric machine for sorting facing tiles according to their size. Stroi. mat. 6 no.12:18-19 D '60. (MIRA 13:11)
(Sorting devices) (Tiles)

85371

S/103/60/021/007/014/014/XX
B012/B063

9.2530

AUTHORS: Lipman, R. A., Ol'shvang, M. V. (Moscow)

TITLE: Semiconductor Magnetic Amplifiers

PERIODICAL: Avtomatika i telemekhanika, 1960, Vol. 21, No. 7, pp. 1073-1083

TEXT: This paper was read at the Vsesoyuznyy seminar po magnitnym elementam avtomatiki i vychislitel'noy tekhniki (All-Union Seminar on Magnetic Elements in Automation and Computer Engineering) on October 13, 1959. First, the authors describe R. E. Morgan's (Ref. 7) circuit diagram of the control amplifier and enumerates its drawbacks, such as wide ranges in which the controlled time of magnetic reversal and the frequency of natural oscillations vary. As a result, it is not possible to attain a considerable change of the output current of the amplifier. This disadvantage can be eliminated by replacing Morgan's circuit diagram (Fig. 1a) by that shown in Fig. 1b. The difference is the following: The rate of magnetic reversal of the

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Semiconductor Magnetic Amplifiers

S/103/60/021/007/014/014/XX
B012/B063

core in the circuit of Fig. 1b is controlled within the operating interval (when the triode is open). The core in the reset interval is demagnetized by the current flowing through the non-return valve. The reset coil is connected in series with the non-return valve. The change of the variables in the circuit of Fig. 1b is diagrammatically shown in Fig. 2. Formulas (14) and (15) are derived for the duration t_A of the operating interval and for the duration t_R of the reset interval, respectively. It follows from (15) that the multiplicity of variation of the controlled time of magnetic reversal of the core in the circuit of Fig. 1b is expressed by formula (16). Formula (17) is obtained for the frequency of natural oscillations. Fig. 3 shows the circuit diagram of the amplifier in accordance with the circuit diagram shown in Fig. 1b. Formulas (14) - (17) and the diagrams of Fig. 2 also hold for the circuit diagram shown in Fig. 3. This circuit diagram is designed for a semiconductor magnetic amplifier operating as a key with intermittent regulation and basing on a relaxation generator with a pulse-width modulation. The relationship between load current and

Semiconductor Magnetic Amplifiers

control signal is examined. It is shown that in the circuit of Fig. 3 there is a clear relationship between load current and collector current of the control triode. This is determined by the ratio of transformation of the feedback transformer and does not depend on the characteristics of the triodes, on the load resistance, and on the feed voltage. The relationship between the collector current of the control triode and the control signal is determined by the characteristics of the semiconductor triode. The load current as a function of the control signal-emf at different feed voltages, load resistances, and inner resistances of the signal source is shown diagrammetrically in Fig. 4. The amplifier characteristics obtained experimentally are given in accordance with Fig. 3. The figure 5 shows the curve of the relative natural oscillation frequencies as a function of the load current, as calculated from formula (17) and obtained experimentally. Fig. 6 shows the load current curves (load current as a function of the control signal-emf and as a function of the control current) at various external temperatures for some semiconductor triode types. It may be seen therefrom

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that a change of the external temperature from -60° to +55°C corresponds to a change of the input signal-emf by ≈ 0.25 v. On the basis of results obtained the following advantages offered by the circuit of Fig. 1b and 3, respectively, are indicated for a comparison with the Morgan circuit: 1) at otherwise equal conditions, the circuit of Fig. 1b requires considerably smaller regions for varying the duration of controlled core re-magnetization time and for the natural oscillation frequency. This increases considerably the stability of the circuit and allows a much higher multiplicity of the load-current change to be obtained. 2) the natural oscillation frequency maximum appears in the circuit Fig. 1b, at a load current $\approx 0.5\ E/R_{load}$ and not at $\approx E/R_{load}$ as in the circuit of Fig. 1a. The mean reactive power of the triode is thereby reduced. 3) The input-output characteristic of the circuit in Fig. 3 is independent of a change of the feed voltage and load resistance. There are 6 figures and 7 references: 5 Soviet.

SUBMITTED: December 18, 1959

Card 4/4

STEFANOVICH, Tamara Khristoforovna; LIPMAN, R.A., red.; LARIONOV, G.Ye., tekhn. red.

[Magnetic amplifiers for the automation of industrial systems] Magnitnye usiliteli dlia avtomatizatsii promyshlennykh ustanovok. Moskva, Gos. energ. izd-vo, 1961. 247 p. (MIRA 14:8)
(Magnetic amplifiers) (Automatic control)

LIPMAN, R.A.; NEGNEVITSKIY, I.B.

Operating conditions in a push-pull d.c. magnetic amplifier.
Elektrichestvo no.6:74-78 Je '61. (MIRA 14:10)

1. Moskovskiy energeticheskiy institut.
(Magnetic amplifiers)

S/103/61/022/002/008/015
B019/B060

9,2530 (also 1031)

AUTHORS: Lipman, R. A., Moskalev, A. I. (Moscow)

TITLE: Magnetic amplifier with self-excitation according to a voltage doubler circuit

PERIODICAL: Avtomatika i telemekhanika, v. 22, no. 2, 1961, 224-230

TEXT: A study has been made of a hitherto rather neglected circuit of a magnetic amplifier (for which see Fig. 1), by starting from the diagrams of the circuit variables (Fig. 2) during one period of the feed voltage, and from the dependence $U_H = U_H(\Delta B_y)$ under the following conditions: 1) The feed voltage is sinusoidal. 2) The discharge time constant of the capacities $C_1 = C_2 = C$ is considerably larger than the period of the feed voltage: $R_H C \gg 1/f$, where f is the frequency of the feed voltage. 3) The loading time constant of the capacities C_1 and C_2 in saturated impedance coils is considerably smaller than the period of the saturation voltage: $r_p C \ll 1/f$. Under these premises the following relations are obtained:

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Magnetic amplifier with ...

$$\Delta B_y/\Delta B_m = -\cos\Theta_s - (\Theta_s - \pi/2)\sin\Theta_s \quad (14)$$

$$U_H/E_m = 2\sin\Theta_s \quad (16)$$

where $\Delta B_m = 2B_m = 2E_m/\omega w_p S_c$ and E_m is the amplitude of the feed voltage. These expressions allow determining the voltage at the load as a function of induction changes in the core. Fig. 3 shows Θ_s and U_H as functions of ΔB_y, calculated with the aid of (14) and (16) for the two circuits presented in Fig. 1. It further follows that the diagram examined here permits increasing the transconductance considerably as compared with the usual bridge circuit (by the 2.5-fold) and extending the working range of the characteristic of the amplifier in the case of unvaried impedance coil parameters and unvaried feed voltage. The drawbacks of these circuits are the higher sensitivity toward the forms of voltage and the amount of the internal resistance of the current feed. The smallest possible inner resistance is required in order to ensure the full benefit of the

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Magnetic amplifier with ...

advantages offered by this circuit. Such a circuit is best suited to serve as an operational magnetic amplifier. There are 6 figures and 2 non-Soviet bloc references.

SUBMITTED: June 18, 1960

Legend to Fig. 1: Magnetic amplifier with self-excitation and d-c output. 1a) bridge circuit, 1б) doubler circuit.

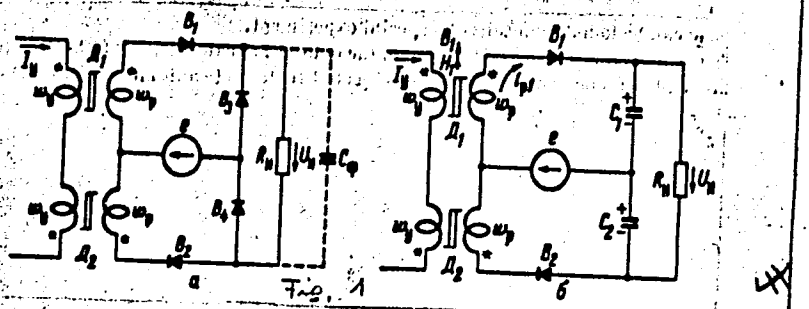

Fig. 1

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9,3280 (1147, 1159)

AUTHORS: Kudryavtsev, O.M., and Lipman, R.A. (Moscow)

TITLE: Controlled non-linear resistance multiplier

PERIODICAL: Avtomatika i telemekhanika, v. 23, no. 2, 1962, 190 - 195

TEXT: The multiplier is based on the principle of automatically controlled transfer coefficient. The design of the device employs two quadripoles, whose transfer coefficients can be varied by means of a controlling voltage. In this case, the functional relation between the transmission coefficient and amplitude of the controlling voltage can be set arbitrarily, but it must remain identical for both quadripoles; the degree with which the last requirement is fulfilled determines finally the working accuracy of the multiplier. For the quadripole having varying transmission coefficients, a controlled non-linear semi-conductor resistance (c.n.s.r.) can be used having two pairs of electrodes placed in two mutually-perpendicular planes. Conduction between any one pair of electrodes varies within wide limits, depending on the amplitude of the controlling voltage

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applied to the second pair of electrodes. In order to ensure substantial improvement in the conductance variation of the c.n.s.r., the current density component in the sample determined by the characteristics of the controlled circuit should be sufficiently small compared with the current density, determined by the action of the controlling voltage; even a relatively small resistance coupling can cause leakage of noise current in the controlled circuit, the amplitude of this will be comparable to the useful signal. In order to eliminate this type of interference, alternating voltage for the control is used, its frequency being considerably higher than the highest signal frequency in the controlled circuit, the interference is then filtered out. In designing the multiplier two c.n.s.r.'s can be used with strictly identical control characteristics; this implies selective assembly of samples. Difficulties are experienced when the device is subjected to wide environmental operating conditions; this can be largely obviated by using a single c.n.s.r. having three pairs of electrodes placed in three mutually-perpendicular planes. There are 2 figures and 5 Soviet-bloc references.
SUBMITTED: April 10, 1961

Card 2/2

9.2520

S/103/62/023/003/010/016
D288/D301

AUTHOR: Lipman, R.A. (Moscow)

TITLE: Semiconductor relay amplifier with shunt feedback

PERIODICAL: Avtomatika i telemekhanika, v. 23, no. 3, 1962, 371 - 382

TEXT: Two-transistor power amplifiers (asymmetric triggers) with shunt feedback circuits only are considered. Those with series feedback (emitter current feedback) were earlier described by the author. The simplest two stage amplifier with a resistive link from 2nd collector to 1st base is investigated first, followed by variants in output load arrangements, supply feeds and by addition of stabilizing non-linear elements-junction diodes to raise switching efficiency. Collector currents of both transistors are plotted vs. input signal for absent, weak and strong feedback, the characteristic in the last case approaching square loop response required for reliable triggering. Use of an n-p-n and a p-n-p device is also considered, to avoid losses occuring when a common bus-bar for input

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S/103/62/023/003/010/016
Semiconductor relay amplifier ... D288/D301

and output is required. Formulas are derived for the negative feedback coefficient and currents for saturation, off- and transient conditions, in terms of current gains, base- and collector current increments and feedback and collector loads. Experimental checks with germanium and silicon transistors, plotting 'on' and 'off' potentials vs. supply voltage, output load, feedback resistance and source impedance, show good agreement with calculation. Application to pulse-width modulators is briefly discussed. There are 7 figures and 4 Soviet-bloc references.

SUBMITTED: May 30, 1961

Card 2/2

KUDRYAVTSEV, O.M. (Moskva); LIPMAN, R.A. (Moskva)

Multiplier using a controlled monlinear resistance [with summary in English]. Avtom. i telem. 23 no.2:190-195 F '62. (MIRA 15:2)
(Automatic control)(Electronic calculating machines)

LIPMAN, R.A., kand.tekhn.nauk; MAZO, R.I., inzh.

Automatic regulator for the charging of grinding machines. Stroi. mat. 8 no.3:22-24 Mr '62. (MIRA 15:8)
(Milling machinery) (Automatic control)

LIPMAN, R.A. (Moskva)

Relay-type transistor amplifier with parallel feedback. Avtom. i telem. 23 no.3:371-382 Mr '62. (MIRA 15:2)
(Transistor amplifiers)

4318
S/103/62/023/012/013/013
D201/D308

9.2530

AUTHORS: Ivanchuk, B.N., Lipman, R.A., and Rubinov, B.Ya. (Moscow)

TITLE: A single-rectifier full-wave magnetic amplifier

PERIODICAL: Avtomatika i telemekhanika, v. 23, no. 12, 1962, 1701 - 1711

TEXT: The authors analyze theoretically a simple series, self-saturating magnetic amplifier and show that, under certain conditions, one of the rectifying elements may be dispensed with, without impairing the overall amplifier performance. Expressions for a single-rectifier amplifier are obtained which determine the behavior of all amplifier parameters in stationary regime and make it possible to calculate all the necessary characteristics of the amplifier circuit. The results of analysis were applied to the experimental amplifiers with transistor and vacuum tube control amplifiers. The experiments have shown that in all cases the input-output characteristics of amplifiers were very nearly the same.

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D201/D308

A single-rectifier ...

The single-rectifier magnetic amplifier can also be controlled by a half-wave choke, the working winding of which is connected in series with the control winding of the amplifier. The analysis is carried out for piecewise linear approximation of the magnetization curve, neglecting the hysteresis and eddy currents and for the resistive load. The cct is of importance because of the economy and reliability and because it may be considered as a basis for many other applications. There are 6 figures.

SUBMITTED: June 30, 1962

Card 2/2

IVANCHUK, B.N.; LIPMAN, R.A.; RUVINOV, B.Ya.

A d.c. amplifier using regulated diodes with full-wave power supply. Elektrichestvo no.10:59-64 O '62. (MIRA 15:12)

1. Moskovskiy energeticheskiy institut.
(Amplifiers (Electronics))

S/271/63/000/002/003/030
A060/A126

AUTHOR: Lipman, R. A.

TITLE: Comparison of semiconductor relays with collector and emitter feedback

PERIODICAL: Referativnyy zhurnal, Automatika, Telemekhanika i Vychislitel'naya Tekhnika, no. 2, 1963, 12, abstract 2A67 (Tr. Mosk. energ. in-ta, 1962, no. 39, 139 - 148)

TEXT: The author considers two types of relay semiconductor amplifier (asymmetrical flip-flop) circuits with positive feedback. The basic design formulae are cited. The relay circuits are designed on the basis of a two-stage DC amplifier with semiconductor triodes. Both types of relay have the same sensitivity. One type of relay has collector feedback, the other has emitter feedback. The relay with collector feedback ensures a greater amount of maximum output power and self-blocking of the relay without additional circuit elements; in the case of emitter feedback this is not possible. The distinguishing peculiarity of the circuit with emitter feedback is the sharp change in the input

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Comparison of semiconductor relays with...

impedance at the instants of switching the relay on and off. The indicated property of that relay may be useful since, for example, in constructing a time-delay relay with an integrating RC circuit the integrating capacitor C may be connected directly to the input of the relay circuit. A modification of the time-delay relay circuit is cited. There are 4 figures and 4 references.

P. M.

[Abstracter's note: Complete translation]

Card 2/2

LIPMAN, Roydzhoy Aleksandrovich; KONEV, Yu.I., doktor tekhn. nauk, retsenzent; BARYSHNIKVA, R.A., red.; LARIONOV, G.Ye., tekhn. red.

[Transistorized relays] Poluprovodnikovye rele. Moskva, Gosenergoizdat, 1963. 95 p. (Biblioteka po avtomatike, no.81) (MIRA 16:10)

(Electric relays)

ROZENBLAT, Moisey Aronovich; LIPMAN, R.A., red.; BUL'DYAYEV, N.A., tekhn. red.

[Magnetic amplifiers and modulators] Magnitnye usiliteli i moduliatory. Moskva, Gosenergoizdat, 1963. 111 p. (Biblioteka po avtomatike, no.74) (MIRA 16:8)
(Magnetic amplifiers) (Modulation (Electronics))

ROZENBLAT Moisey Aronovich; LIPMAN, R.A., red.; BORUNOV, N.I., tekhn. red.

[Magnetic amplifiers with self-saturation] Magnitnye usiliteli s samonasyshcheniem. Moskva, Gosenergoizdat, 1963. 125 p. (Biblioteka po avtomatike, no.75) (MIRA 16:8)
(Magnetic amplifiers)

DMITRIYEV, V.M., inzh.; LIPMAN, R.A., kand.tekhn.nauk

Transistor time relays. Vest. elektroprom. 34 no.2:45-50 F '63. (MIRA 16:2)
(Electric relays)

S/119/63/000/003/003/010
D201/D308

AUTHORS: Lipman, R.A. and Mazo, R.I.

TITLE: Device for programmed control of temperature of periodic electric furnaces

PERIODICAL: Priborostroyeniye, no. 3, 1963, 10-12

TEXT: The authors describe briefly the operation of a hybrid electronic program controller for periodically operated electric furnaces. With d.c. voltage at the input of the valve preamplifier, it operates as a relay, while an a.c. voltage applied to the input results in output pulses the duration of which, and hence the mean load current, is determined by the interval during which the input forming voltage reaches two consecutive predetermined values. The preamplifier controls a transistorized magnetic amplifier with output up to 30 kW. The programmer pick-up is in the form of a stencil, the outer contours of which represent the heating and cooling cycles of the furnace and govern the position of the slider of the potentiometer setting the input voltage. Practical results ob-

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S/119/63/000/003/003/010
D201/D308

Device for programmed control ...

tained with the programmer described show that it is possible to control the furnace temperature within negligible margins of error. There are 4 figures.

Card 2/2

ACCESSION NR: AR4041523 S/0271/64/000/005/A008/A008

SOURCE: Ref. zh. Avtomatika, telemekhanika i vy*chislitel'naya tekhnika. Svodny*y tom, Abs. 5A52

AUTHOR: Belyayev, A. Ya.; Lipman, R. A.; Negnevitskiy, I. B.

TITLE: Presentation of magnetic amplifier in the form of equivalent controlled oscillator for purposes of analysis and calculation

CITED SOURCE: Sb. dokl. Tashkentsk. politekhn. in-t, no. 3, 1963, 20-39

TOPIC TAGS: magnetic amplifier, controlled oscillator

TRANSLATION: The magnetic amplifier is considered as a controlled source of current or voltage. The output of the magnetic amplifier within certain limits depends only on the input signal and not on resistance of load, frequency, and supply voltage. On this basis there is analyzed operation of magnetic amplifier of bridge type with self-saturation having output of direct current and one ballast resistor (magnetic amplifier with increased efficiency). There are shown advantages of calculation of characteristics of magnetic amplifier in the form of controlled

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ACCESSION NR: AR4041523

source over method of usual calculation. Under assumptions that hysteresis loop ideally is rectangular, active resistance of operation coils is equal to zero, diodes are ideal, and so forth, it is shown that magnetic amplifier has maximum efficiency of 50% during equality of load and ballast resistors. Results are given of experiment for magnetic amplifier with cores OL 20/25-5 at a frequency of 400 cps and a supply voltage of 23 v. Six illustrations. Bibliography: 5 references.

SUB CODE: EC ENCL: 00

Card 2/2

LIPMAN, R.A.; MAZO, R.I.

Noncontact magnetic semiconductor program temperature controller for electric furnaces. Priborostroenie no.4:16-17 Ap '63. (MIRA 16:4) (Thermostat)

LIPMAN, R.A. (Moskva); NEGNEVITSKIY, I.B. (Moskva); ZAYDEL', Kh.E. (Moskva)

New operating modes and elements of the design of a two-cycle d.c. magnetic amplifier. Elektrichestvo no.4:63-67 Ap '63. (MIRA 16:5)
(Magnetic amplifiers)

ACCESSION NR: AP4022903 S/0119/64/000/003/0010/0012

AUTHOR: Lipman, R. A. (Candidate of technical sciences)

TITLE: Ferrite-transistor time-delay unit

SOURCE: Priborostroyeniye, no. 3, 1964, 10-12

TOPIC TAGS: time delay unit, ferrite, ferrite transistor time delay unit, master oscillator, frequency divider, time delay

ABSTRACT: A light, simple time-delay unit is described whose functioning depends on an adjustable-frequency master oscillator and an adjustable-ratio frequency divider. The unit comprises four or more ferrite-core-two-transistor elements. One of them, suggested by G. H. Royer (Trans. IEE, 1955, v. 74, part 1, pp 322-324), operates as a master oscillator. Others suggested by G. F. Pittman (Trans. IEE, 1955, v. 74, part 1) function as storing pulse counters and effect frequency division. A laboratory model was assembled and tested with

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ACCESSION NR: AP4022903

P16V and P104 transistors and OL-16/22,5 -- 3,5-34NKMP-0,22 ferrite cores. With 6 cores, 12 transistors, and 19 resistors, the model provided an adjustable time delay from 0.005 to 5,000 sec. It is also claimed that the delay varied only by ±1% within -60+60C. Orig. art. has: 5 figures and 11 formulas.

ASSOCIATION: none

SUBMITTED: 00	DATE ACQ: 08Apr64	ENCL: 00
SUB CODE: GE	NO REF SOV: 000	OTHER: 002

Card 2/2

ACCESSION NR: AT4040781 S/2657/64/000/011/0130/0143

AUTHOR: Ivanchuk, B. N., Lipman, R. A., Ruvinov, B. Ya.

TITLE: Simplified amplifier circuits using controllable valves with an active-inductive load

SOURCE: Poluprovodnikovy*ye pribory* i ikh primeneniye; sbornik statey, no. 11, 1964, 130-143

TOPIC TAGS: amplifier, DC amplifier, valve, controllable valve, semiconductor device, rectifier, gain factor

ABSTRACT: The authors note that the power circuit of amplifiers with DC output using semiconductor valves is normally based on well-known rectifier circuits. A full-wave rectifier arrangement with differential transformer, requiring a minimum number of valves (see Figure 1.a in the Enclosure), is also used. The active-inductive load in this Figure is normally shunted by a so-called reverse valve Δ_o. However, in those cases in which the inductive component of the load resistance $2\pi f L_H$ (f is the frequency of the supply net) is rather large in comparison with the active component R_H, the possibility is presented of employing, in place of the circuit shown in Figure 1.a, the far simpler

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Card

arrangement shown in Figure 1.b. This set-up makes use of only one controllable (BY) and one uncontrolled (Δ) valve. The feasibility of the effective utilization of the circuit arrangement given in Figure 1.b flows from the fact that with half-wave rectification the magnitude of the load current depends both on the active as well as on the inductive component of the load resistance, while in the case of full-wave rectification the mean value of the load current is determined by the active component alone. Thus, when the following condition is fulfilled

$$\frac{\omega L_s}{R_s} \gg 1, \qquad (1)$$

this amplifier arrangement permits a wide range of current. The operation of this circuitry is examined in detail. A substantial shortcoming of the circuits shown in Figures 1, a and 1, b is the presence of the transformer Tp, through which the full load power is transmitted. The authors explain how this defect can be eliminated by feeding the circuit with a three-phase AC net, as shown in Figures 1, c and 1, d. Figure 1, e shows the power circuit of an amplifier with controllable valves with a 3-phase rectification set-up in which one of the valves can be uncontrolled, if condition (1) is

ACCESSION NR: AT4040781

fulfilled. In the article, the authors have demonstrated that, with an active-inductive load and time constant sufficiently large with respect to the period, it is possible to dispense with the control of one of the valves. A general analysis of the operation of these simplified circuit arrangements is made and it is shown that the basic characteristics of the amplifiers based on Figures 1, b, c, and d (form of the input-output characteristic, efficiency of valve utilization) practically coincide, with the exception of the multiple to which the load current may be varied; that is, the amplification factors. Formulas are given in the text whereby this multiple or gain factor can be calculated for the different types. Orig. art. has: 7 figures and 19 formulas.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 01

SUB CODE: EC NO REF SOV: 003 OTHER: 001

3/4
Card

ACCESSION NR: AT4040781

ENCLOSURE: 01

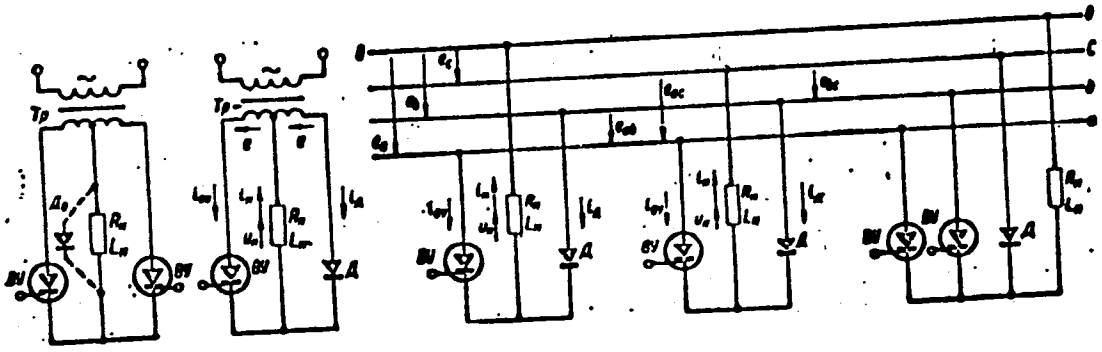

Fig. 1. Power circuit variants of amplifiers using controllable valves.

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Card

ACCESSION NR: AT4040782 S/2657/64/000/011/0144/0159

AUTHOR: Ivanchuk, B. N., Lipman, R. A., Rubinov, B. Ya.

TITLE: Amplifier circuits using controllable valves and supplied with direct current

SOURCE: Poluprovodnikovy*ye pribory* i ikh primeneniye; sbornik statey, no. 11, 1964, 144-159

TOPIC TAGS: amplifier, DC amplifier, relay amplifier, pulse modulation, semiconductor device, silicon semiconductor, valve, controllable valve, silicon valve

ABSTRACT: The circuitry of a DC amplifier with capacitance quenching of the controllable valve is studied in detail in the course of a discussion regarding the possibility of employing silicon valves for the construction of amplifier circuits fed from a direct-current source. A triode, thermistor, photoresistance, etc. may be used as the controlled resistance in the examples proposed by the authors. The circuitry of a DC relay amplifier is described in the article, its operation is analyzed in depth and the fundamental engineering formulas pertaining to the device are derived. Expressions characterizing the maximum yield mode are studied and oscillograms illustrating the change in the variables in this working mode are presented in confirmation of

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ACCESSION NR: AT4040782

theoretical assertions. The use of pulse-width modulation to achieve a continuous input-output characteristic is considered for this and certain other types of amplifiers. Orig. art. has: 9 figures and 17 formulas.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00
SUB CODE: EC NO REF SOV: 002 OTHER: 000

Card 2/2

IVANCHUK, Boris Nikolayevich; LIPMAN, Roydzhoy Aleksandrovich; RUVINOV, Boris Yakovlevich; CHILIKIN, M.G., red.;

[D.C. amplifiers with p-n-p-n- structure] Tiristornye usiliteli postoiannogo toka. Moskva, Energiia, 1964. 94 p. (Biblioteka po avtomatike, no.117. Elektroprivody s poluprovodnikovym upravleniem) (MIRA 17:11)

IVANCHUK, B.N. (Moskva); LIPMAN, R.A. (Moskva); RUVINOV, B.Ya. (Moskva)

Transistorized magnetic amplifiers for a.c. motor control.
Elektrichestvo no.11:44-50 N '65. (MIRA 18:11)

L 20748-66 EWT(d)/EWP(1) IJP(c) GG/BB

ACC NR: AP6010286 SOURCE CODE: UR/0103/66/000/003/0105/0112

AUTHOR: Dmitriyev, V. M.; Lipman, R. A.

ORG: none

42
8

TITLE: Ferrite-transistor analog memory device with destructive readout

SOURCE: Avtomatika i telemekhanika, no. 3, 1966, 105-112

TOPIC TAGS: ferrite core memory, analog system, computer component

ABSTRACT: An analog memory device based on partial switching of strip ferrite cores is described. The device (see figure) consists of transformer Tr with three windings: (W_3, write; W_2, read; W_1, feedback), transistor T, and switch S controlling the write operation. The circuit has three operating modes: 1) write—S closed, T in cut-off region; 2) storage—S open, T in cut-off region; 3) read—S open, T in saturation region. Tests of an experimental model using OL-20/26-6.5-34 34NKMP-0.05 cores and P21A transistors (one of them functioning as the switch) produced the following results: The relative constant error component δ ($x_{write} = x_{read} + \delta$) was 0.01 for x_{write} between 0.05 and 1.0, and its deviation did not exceed ±0.0015. If the constant error is compensated, the input/output characteristic of the memory device will

Card 1/2 UDC: 681.142.652.2

L 20748-66

ACC NR: AP6010286

not differ from the ideal by more than 0.15%. When write and read pulses were 4 μsec in duration, the nonlinearity of the device did not exceed 0.1%. Orig. art. has: 3 figures and 34 formulas.

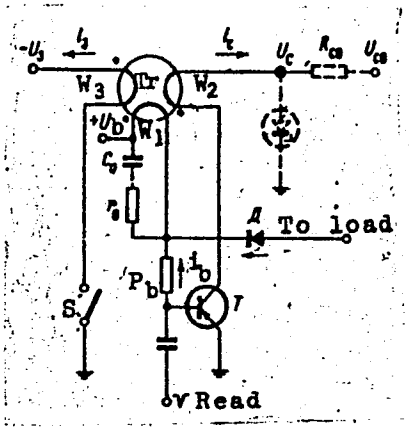

Fig. 1. Analog memory circuit

[BD]

SUB CODE: 09/ SUBM DATE: 18May 65/ ORIG REF: 003/ ATD PRESS: 4124

Card 2/2

L 47357-66 EWT(1)

ACC NR: AP6030573 SOURCE CODE: UR/0413/66/000/016/0054/0055

INVENTOR: Ivanchuk, B. N.; Lipman, R. A.; Merlin, L. M.; Ruvinov, B. Ya.

ORG: none

TITLE: Controlled-frequency pulse generator. Class 21, No. 184934

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 16, 1966, 54-55

TOPIC TAGS: pulse generator, transistor

ABSTRACT: An Author Certificate has been issued describing a controlled-frequency pulse generator (see Fig. 1) containing an integrating RC-circuit and a slave blocking-generator in the transistor. To increase the frequency stability of output pulses, a stabilitron tube is inserted in the main transistor, connected in parallel with a charge capacitance. To increase the capacity of output pulses, a source of supplemental emf is connected to the collector transistor. Orig. art. has: 1 figure. [Translation] [NT]

Card 1/2 UDC: 621.373.424:621.382.3

L 47357-66

ACC NR: AP6030572

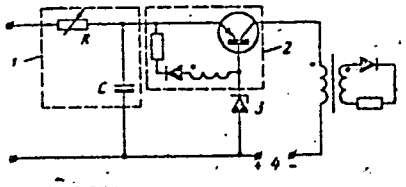

Fig. 1. Controlled-frequency pulse generator.
1—RC-circuit; 2—slave blocking generator in the transistor; 3—stabilitron tube; 4—source of supplemental emf.

SUB CODE: 10/ SUBM DATE: 02Mar65/

Card 2/2 mt

ACC NR: AP7001433 (A,N) SOURCE CODE: UR/0413/66/000/021/0156/0157

INVENTOR: Lipman, R. A.; Fatyushin, V. A.

ORG: none

TITLE: Direct current integrator. Class 42, No. 188144

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 21, 1966, 156-157

TOPIC TAGS: integration, direct current, electronic circuit, pulse integrator

ABSTRACT: An Author Certificate has been issued for a d-c integrator (see Fig. 1) which contains an integrating amplifier and a memory device which stores the

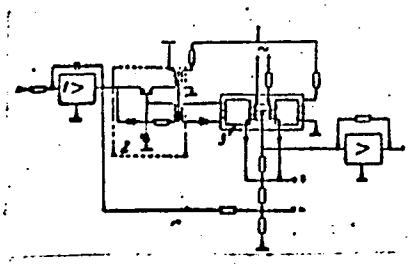

Fig. 1. A direct current integrator

1 - Integrating amplifier; 2 - blocking generator; 3 - transfluxor.

Card 1/2 UDC: 681.142.07

ACC NR: AP7001433

integrated time-varying input signal at the end of the integrating interval. To increase reliability and to reduce size, the device contains a transfluxor which is controlled by voltage pulses generated by a blocking generator connected to the integrating amplifier output. Orig. art. has: 1 figure. [IV]

SUB CODE: 09/ SUBM DATE: 30Oct65/ ATD PRESS: 5110

Card 2/2

LIPMAN, R.Kh.

Stratigraphic significance of Radiolaria. Mat. VSEGEI Ob. ser. no.8: 89-92 '48. (MIRA 11:4)

(Radiolaria, Fossil)

LIPMAN, R. Kh.

Rocks, Siliceous -Siberia, Eastern

New data on the age of siliceous rock of the Far East based on identification of the radiolaria. Dokl. AN SSSR 86 No. 2, 1952

Monthly List of Russian Accessions, Library of Congress, Dec. 1952. Unclassified.

LIPMAN, R.Kh.

[redacted]

Contributions to the study of Radiolaria of the Paleogene in the western regions of Central Asia. Ezhegod.Vses.paleont.ob-va 14: 135-162 '53. (MLRA 8:3)

(Asia, Central--Radiolaria, Fossil)

Lipman, R. Kh.

15-57-7-10037

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 7, p 191 (USSR)

AUTHORS: Balakhmatova, V. T., Lipman, R. Kh.

TITLE: Stratigraphic Subdivision of the Devonian, Upper Jurassic, Cretaceous, and Tertiary Rocks, on the Basis of Microfauna Study, in the Barabinsk Exploratory Drill Hole 1-R (Stratigraficheskoye raschleneniye devonskikh, verkhneyurskikh, melovykh i tretichnykh otlozheniy po Barabinskoy opornoy skvazhine 1-R na osonovanii izucheniya mikrofauny)

PERIODICAL: Materialy Vses. n.-i. geol. in-ta, 1955, Nr 9, pp 70-87

ABSTRACT: The Mesozoic and Tertiary deposits in the Barabinsk exploratory drill hole 1-R, occurring in the interval 2408.5 m to 37 m, have been divided into three formations and seven zones on the basis of study of the

Card 1/5

Stratigraphic Subdivision of the Devonian (Cont.)

microfauna. The lower formation (at a depth of 2408.5 m to 2269 m) contains a group of radiolarians of Devonian age. Above this formation occurs a Middle Jurassic coal-bearing sequence, about 130 m thick, which is overlain by fine-oolitic argillaceous limestones of Callovian age, containing Cristellaria hoplites Wisn., C. folium Wisn., Frondicularia nodulosa Furss, and the ammonites Quenstedticeras sp. At a depth of 1978 m abundant foraminifers of the Lower Volga series were encountered. These correspond to the Ammodiscus tenuissimus of other drill holes and make it possible to differentiate a characteristic microfossil zone. A second zone is differentiated only in the described drill hole, in the interval 1845 m to 1693 m, in Meocomian rocks, containing fresh-water ostracods and ooginii (?) characeous seaweed characteristic of Wealdian rocks. Microfaunas are not present in the deposits of the upper part of the Lower Cretaceous and of the lower part of the Upper Cretaceous (at depths of 1323.5 m to 785 m). The age of these rocks (Aptian-Albian, Albian-Cenomanian, and

Stratigraphic Subdivision of the Devonian (Cont.)

Turonian) is determined by flora, spore-pollen groups, and Inoceramus. Dark gray mudstones with fish remains and belemnite and ammonite (Rasenia sp.) fragments represent the Oxfordian and Kimmeridgian stages. The Gaudryana filiformis zone, until recently considered to be Albian, was recognized at depths of 754 m to 732 m. New data, discoveries of Baculites romanovskyi Arkh., demand that this layer be referred to the Turonian. It is the third characteristic zone of the Barabinsk exploratory drill hole that has regional significance for the Western Siberian lowland. The fourth zone is found in the interval 728.5 m to 724 m and contains small discorbids and anomalinids: Discorbis sibiricus Dain., Valvulineria westsibirica Dain., and Anomalina sibirica Dain. of Santonian age. Abundant radiolarians and arenaceous foraminifers are found in the interval 594.6 m to 542.4 m and they define a characteristic radiolarian formation. Above this formation, at depths from 541 m to 537 m, a transitional zone is distinguished, characterized by calcareous and arenaceous varieties of foraminifers. The rocks of this zone

Stratigraphic Subdivision of the Devonian (Cont.)

are referred to the Santonian, inasmuch as Pteria tenuicostata (Roem.) is found at a depth of 539.5 m. A zone of Campanian-Maestrichtian foraminifers, having regional distribution, is recognized in the interval 537 m to 469 m. The rocks at depths of 469 m are provisionally referred to the Ammobaculites incultus Ehr. zone of Danian age. They mark the seventh zone. Tertiary deposits appear at a depth of 461 m. The deposits between 461 m and 431 m are tentatively considered Paleocene. Between 431 m and 383.5 m an upper radiolarian formation is distinguished. It contains a massive accumulation of radiolarians, diatoms, sponge spicules and remains of fish skeletons of Eocene age. This Tertiary formation and its microfaunal content have a wide regional distribution. The rocks in the interval of 377 m to 285 m are distinguished as the supra-radiolarian formation of Oligocene age. A formation at depths of 285 m to 37 m is subdivided into six horizons on the basis of spore-pollen studies, and is Miocene in age. The authors provide a summary outline of the distribution

Stratigraphic Subdivision of the Devonian (Cont.) 15-57-7-10037

of exploratory drill holes and a bibliography with 67 references.
Card 5/5 G. V. Fomina

15-57-4-4133

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 4, pp 13-14 (USSR)

AUTHORS: Lipman, R. Kh., Romanova, V. I.

TITLE: The Stratigraphic Subdivisions of the Upper Jurassic, Cretaceous, and Paleogene in the Tyumen' Exploratory Drill Hole 1-P as Determined by the Study of Microfossils (Stratigraficheskoye raschleneniye verkhneyurskikh, melovykh i paleogenovykh otlozheniy po Tyumenskoy opornoy skvazhine 1-P na osnovanii izucheniya mukrofauny)

PERIODICAL: Materialy Vses. n.-i. geol. in-ta, 1955, Nr 9, pp 88-113.

ABSTRACT: The Tyumen' exploratory hole was drilled to a depth of 1434 m. The identification of foraminifers from more than 1000 samples has established the Upper Jurassic age of the deposits in the depth interval 1426 m to 1343 m. The rock sequence in this interval consists of clays at 1426.0 m to 1419.8 m referred to the Callovian

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